

# Work Order ID 72774

Friday, August 12, 2011 2:35:50 PM



Page 1

Item ID: D206-667-101

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Fwd

Start Date: 8/12/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 8/19/2011 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals: Process Plan:

Date: 11-08-12 Tooling:

Date:

QC:

Date: SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
D206-667-141	Rev C (DEO)
DSI9565	A

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-101 CHG004

*Sublog*

*MF 11-9-8*

110

0.00



Packaging

Packaging

Memo

0.00

Packaging

*DP*

*11-8-22*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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NOTE: Date & initial all entries

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Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 1

Memo

0.00

CNC Delta 100 Bender

Bend tube as per Dwg D206-667-141 using CNC bender program 206B-fw and Folio FT \_\_\_\_\_

11-8-22

130

0.00



QC15- Crosstube Dimensional Check

QC

Memo

0.00

Quality Control

5/10/23

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill holes &amp; ream using drill Jig DT8541 &amp; DT8542 as per Dwg D206-667-141. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 &amp; DT8542 as per Dwg D206-667-141. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-141. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-141. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-141. Allow rivet to sit below surface to compensate for paint.

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-141 Inside of Cuff (Do not engrave on outside of tube)

10-Deburr &amp; Inspect for surface damage. Repair damage within limits as per Dwg D206-667-141

JW  
SAD 11-08-24

SAD 11-08-24

W/O:		WORK ORDER CHANGES					
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Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150	Crosstubes Chemical Conversion	0.00							
HandFXtube	Memo	0.00							
Hand Finishing Crosstubes									
160	QC3- Inspect Part Finish	0.00							
QC	Memo	0.00							
Quality Control									
170	QC5- Inspect part completeness to step on W/O	0.00							
QC	Memo	0.00							
Quality Control									

SAO 11-08-24

(1)

8 uloc/25

5 uloc/25

W/O:		WORK ORDER CHANGES					
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Stop



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180

Outsource process - NDT per QSI038 4.1

0.00



Outsource2

Memo

0.00

Outsource process - NDT

Liquid Penetrant Inspection as per QSI 038Or  
Issue P/O: 14748 LPI as per ASTM 1417  
Level 2 Attach copy of NDT results to work order

CL 11/08/29 ①

190

Packaging

0.00



Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

CL 11/08/29 ①

200

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Inspect for damage &amp; ensure results are as per Dwg D206-667-103

W 11-08-29 ①

W/O:		WORK ORDER CHANGES					
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Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
210		0.00							
	SprayPaint						11	09	01
SprayPaint	Memo	0.00							
Spray Painting	1-Prime inside and outside crosstube as per QSI 005 4.2.1 *****Let tube sit up right for 30mins before hanging*****  P4500-P-23 Base Batch: 117609 P4500-C-23 Catalist Batch: 117609  Start time: <del>8:00</del> 8:00 Finish: <del>2:30</del> 9:00								
220	QC14- Inspect Spray Paint	0.00							
QC	Memo	0.00							
Quality Control	Wrap in plastic bag to protect from scratches								

W/A  
8

Reamer  
Stop

W/O:		WORK ORDER CHANGES					
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Customer:

Reference:

Approvals: Process Plan: Date: Tooling: Date:

Run Start

QC: Date: SPC (Y/N): Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

230

0.00



SprayPaint

SprayPaint

Memo

0.00

Spray Painting

1-Paint outside crosstube with White Imron as per QSI 005

4.2

Imron 55U white paint

Batch: 118341

Imron 125S activator

Batch: 118662

Start: 12:30 Finish: 2:00

M 11 09 01 ①

240

0.00



QC14- Inspect Spray Paint

QC

Memo

0.00

Quality Control

2T 11-09-02

W/O:		WORK ORDER CHANGES					
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Run Start

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Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

250

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Abrade mating surfaces of support and crosstube with 400 grit sandpaper,  
clean the area with 4105S wash 'n' wipe2-Install supports with Proseal 890 per DSI9565 and QSI 015  
A/R Proseal 890 Batch: 118234

3- Torque bolts as per dwg

3-Install nut plates as per Dwg D206-667-141. Touch-up rivet heads with Imron  
paint.

260

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

*Subtotal**QC*

W/O:		WORK ORDER CHANGES					
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Stop



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Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

270

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

SP

SP 11-09-08

280

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

Sulorog

290

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206-667-101

Location: \_\_\_\_\_

PPP Rev: A

11/9/13 SP

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Sequence ID/  
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Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

300

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/9/14

MF  
11-09-13

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Crosstube Fwd





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Start Qty: 1.00

Required Qty: 1.00

Comments: IPP Rev: F 105.09.01 Add holes for compatibility with Bell Skidtubes KJ/JLM  
 IPP Rev: G 08-06-03 update as per DS19415 (ECN1198) DD verified by: ec  
 IPP Rev: H 08-07-28 update as per (par 08-013) DD verified by: EC  
 IPP Rev J 09.01.06 Per ECN 08-562 EC verified by: DD IPP REV: K  
 11.08.05 PER ECN 11-615 DD VERF: EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D2873-043  Nut Plate Assembly		Manufactured	No			250	Each	16.0000	2	2		11-09-07	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG		16							
				72248		16							
D2873-045  Nut Plate Assembly		Manufactured	No			250	Each	11.0000	2	2		11-09-07	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG		11							
				71983		11							
D2891-1  2.25 Support		Manufactured	No			250	Each	0.0000	2	2		11-09-06	
D3595-063-395  RUBBER CUSHION		Manufactured	No			250	Each	109.0000	4	4		11-09-06	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG		108							
				70975		108							
				LG055		1							
				63368		1							

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Start Date: 8/12/2011

Required Date: 8/19/2011

Start Qty: 1.00

Required Qty: 1.00

MS20601-AD4W8

Purchased

No

250

Each

271.0000

14

14



RIVET



11-09-07

## Location

## Loc Qty

## Loc Code

LG	100	
108521	100	
LG051	171	
117106	7	
117381	3	
117979	3	
118454	58	
118572	100	

AN5-30A

Purchased

No

270

Each

76.0000

4



BOLT



SP 11-09-08

## Location

## Loc Qty

## Loc Code

ST339	76	
116003	2	
117514	29	
118191	25	
118451	20	

AN5-32A

Purchased

No

270

Each

188.0000

4



Bolt



SP 11-09-08

## Location

## Loc Qty

## Loc Code

ST340	188	
117161	1	
117514	27	
117872	60	
118191	50	
118422	50	

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Shop Packet Print

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W/O:		WORK ORDER CHANGES					
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Start Qty: 1.00

Required Qty: 1.00

AN5-7A

Purchased

No

270

Each

187.0000

10

10



Bolt



SP 11-09-08

## Location

## Loc Qty

## Loc Code

ST337

187

117313

14

117441

150

118422

23

ST337

187

117313

14

117441

150

118422

23

ST337

187

117313

14

117441

150

118422

23

## Location

## Loc Qty

## Loc Code

ST300

1205

116105

5

116548

53

117441

498

117591

63

117611

90

118179

496

ST300

1205

116105

5

116548

53

117441

498

117591

63

117611

90

118179

496

## Location

## Loc Qty

## Loc Code

LG050

68

116799

10

117279

16

118236

42

AN960JD516

NAS1149D0563J

Purchased

No

270

Each

0.0000

18

18



Washer



SP 11-09-08

MS21042L5

Purchased

No

270

Each

1,205.0000

4

4



Nut



SP 11-09-08

MS21920-20

Purchased

No

250

Each

68.0000

4

4



Clamp (per MIL-DTL-8783C)



SP 11-09-08

Friday, August 12, 2011 2:35:56 PM

Shop Packet Print

Page 3

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

# Picklist Print

Friday, August 12, 2011 2:35:56 PM

Page 4

Work Order ID: 72774



Parent Item: D206-667-101



Parent Item Name: Crosstube Fwd

Start Date: 8/12/2011

Required Date: 8/19/2011

Start Qty: 1.00

Required Qty: 1.00

D206-667-101TRN

Manufactured

No

110

Each

4.0000

1

1



Crosstube Turning Detail

Location

Loc Qty

Loc Code

LG003

4

50518

1

50519

1

54009

1

54010

1

① DP 11-8-22

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

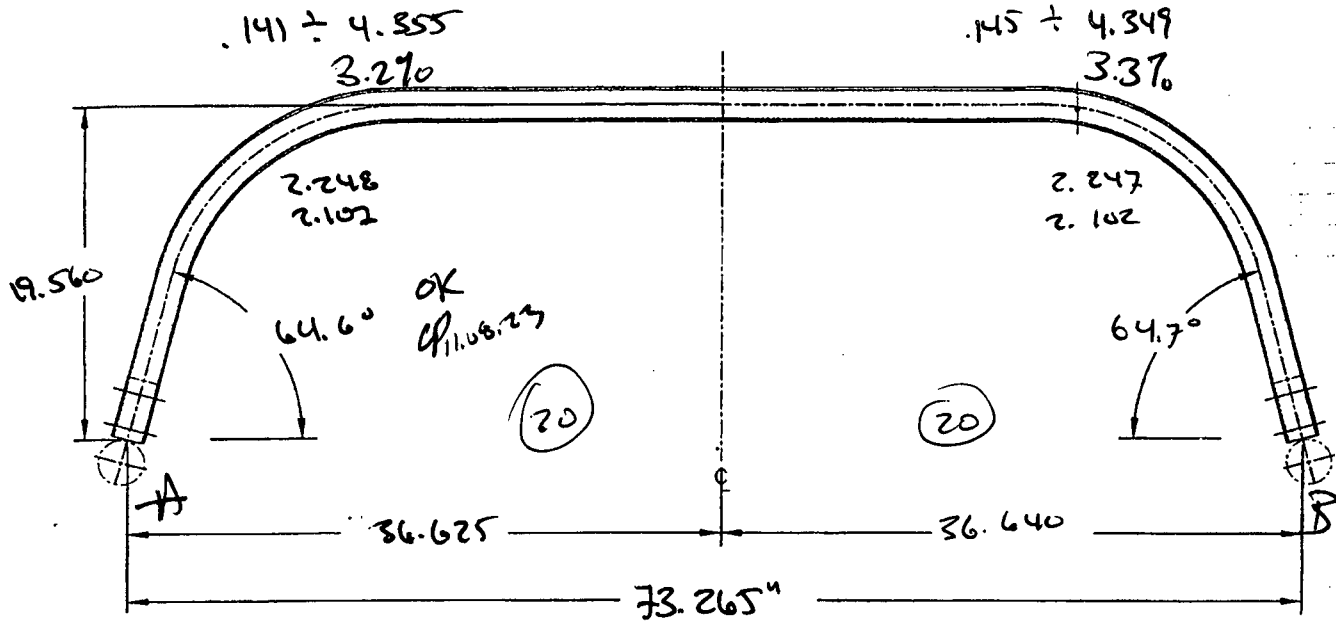
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

DART AEROSPACE LTD		Work Order:	72774
Description: Crosstube High Fwd (206B)		Part Number:	D206-667-101
Inspection Dwg: D206-667-141 Rev: C		Page 1 of 1	

Required Dimension	Min	Max
Height	19.41	19.67
1/2 Span	36.47	36.73
Angle	65	67
Total Span	72.94	73.46



Comments	
Side A = 3.270	crush @ 20 passes
Side B = 3.370	crush @ 20 passes
Angles below tolerance Acceptable CP 11.08.23	

QC15 Inspection	0
Date	11/08/23

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.07.30	Dimensions revised per Dwg Rev C	KJ	



Item	Qty -141	Part Number	Description
1	X	D206-667-141	CROSSTUBE ASSEMBLY (206B HIGH FWD)
2	1	D6001-105	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

# **GENERAL NOTES:**

- 1) MATERIAL: MANUFACTURED FROM D6001-105  
FINISHED LENGTH = 93.18±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-141" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 11.3 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 12 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

SHOP COPY  
RETURN TO  
ENGINEERING  
UNCONTROLLED COPY  
SUBJECT TO AMENDMENT  
WITHOUT NOTICE  
WORK ORDER  
NO. 72724

*PL 11-08-12*

DEO ATTACHED

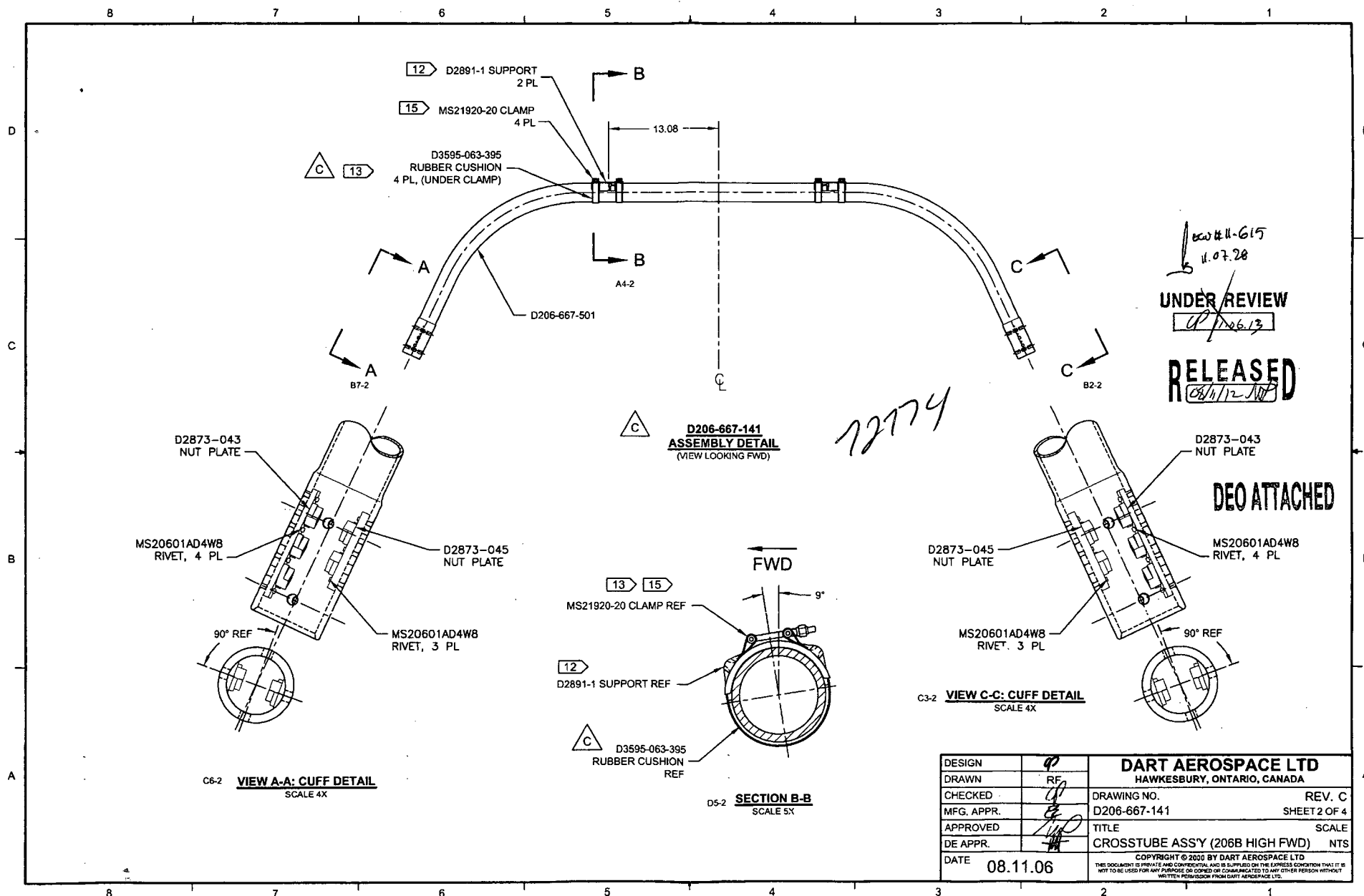
OCW#11-615  
11.07.26

UNDER REVIEW

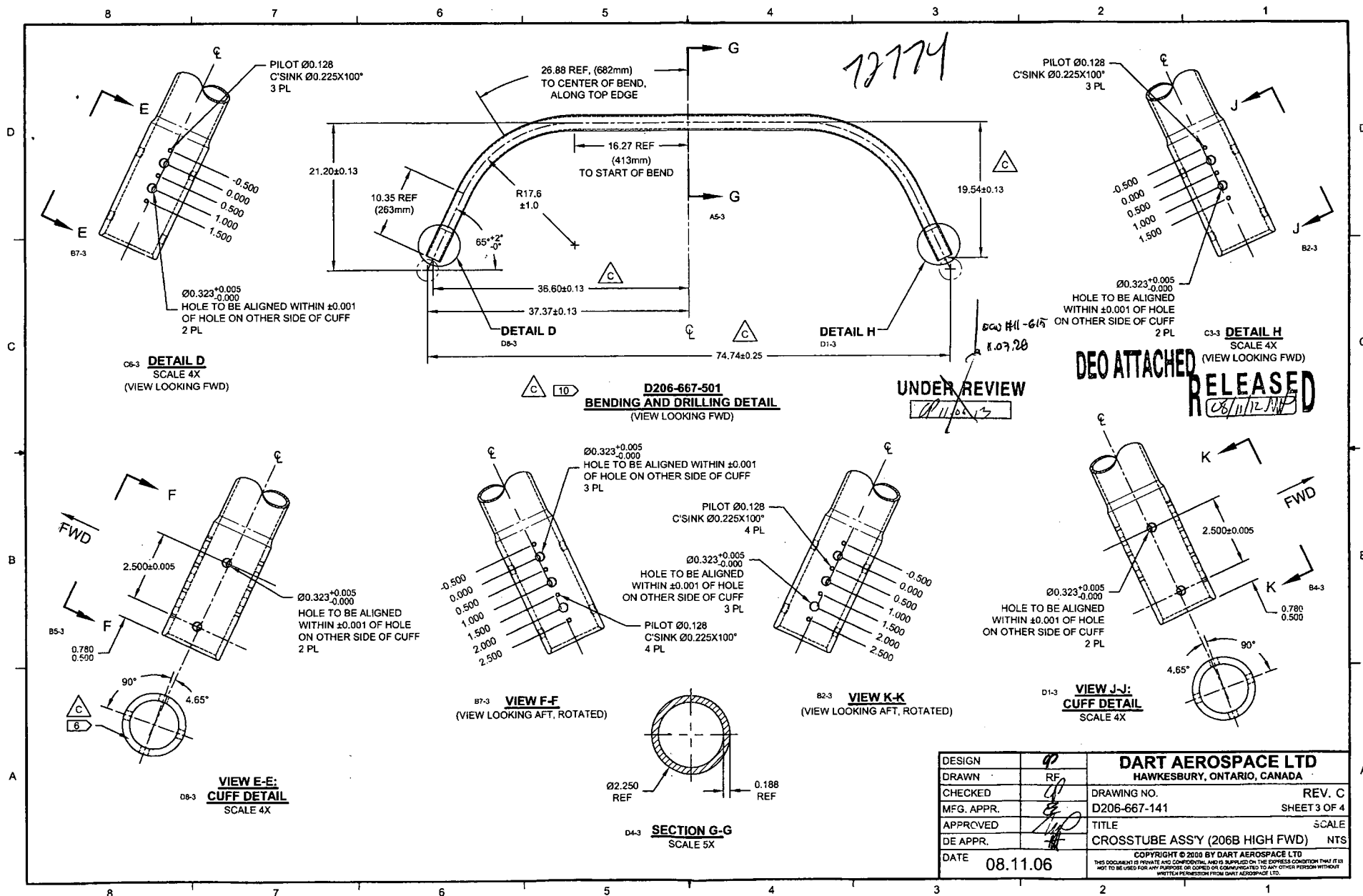
RELEASED  
*08/11/12*

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2856-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCES (ZN C4-3, C5-3 & D3-3); RELOCATED FLAG #6 (ZN A5-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	<i>RF</i>	<b>DART AEROSPACE LTD</b> HAWKESBURY, ONTARIO, CANADA	
DRAWN	<i>RF</i>	DRAWING NO.	REV. C
CHECKED	<i>RF</i>	D206-667-141	SHEET 1 OF 4
MFG. APPR.	<i>RF</i>	TITLE	SCALE
APPROVED	<i>RF</i>	CROSSTUBE ASS'Y (206B HIGH FWD)	NTS
DE APPR.	<i>RF</i>	DATE 08.11.06	

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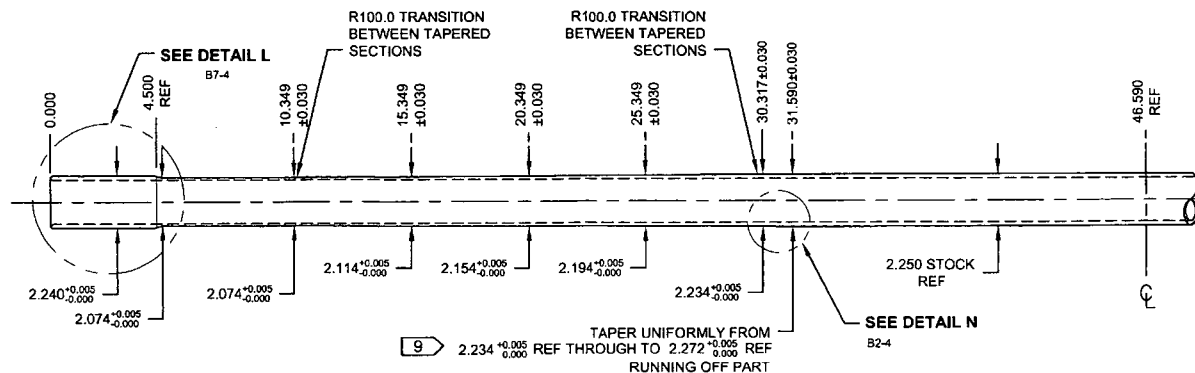
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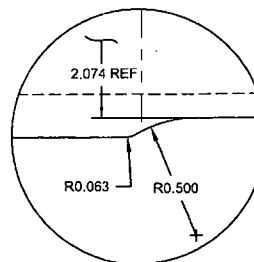
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B

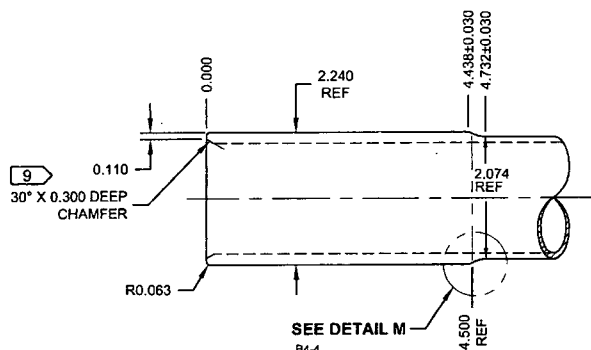
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△ TURNING DETAIL

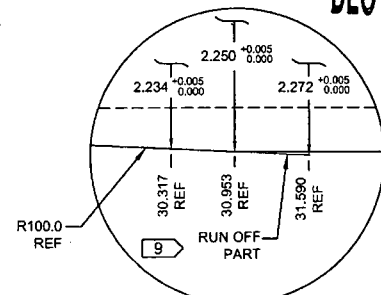


A6-4 DETAIL M: CUFF TRANSITION NOT TO SCALE



D7-4 DETAIL L: CROSSTUBE CUFF NOT TO SCALE

72774



C4-4 DETAIL N: TAPER RUN-OFF NOT TO SCALE

BC 411-015  
11.07.18  
UNDER REVIEW  
4/1/2013

DEO ATTACHED

RELEASED  
08/11/12

DESIGN	9	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	CP	DRAWING NO.	REV. C
MFG. APPR.	CP	D205-667-141	SHEET 4 OF 4
APPROVED	CP	TITLE	SCALE
DE APPR.	CP	CROSSTUBE ASS'Y (206B HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD	
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DRAWING NO. D206-667-141	TITLE CROSSTUBE ASS'Y (206B HIGH FWD)	REV. C	<b>DART AEROSPACE LTD ENGINEERING ORDER</b>		D.E.O. NO. D206-667-141-C-1	SHEET NO. SHEET 1 OF 1	SCALE NTS
DRAWN <i>qp</i>	CHECKED <i>ASS</i>	MFG. APPR. <i>MD</i>	APPROVED <i>MD</i>		DE APPR. <i>MD</i>		
DATE 11.07.15	DATE 11.07.20	DATE 11.07.21	DATE 11/07/21		DATE 11.07.21		

**PURPOSE:**

REPLACE MAGNOBOND WITH PROSEAL.

**CHANGE:**

IS:

Item	Qty -141	Part Number	Description
9	A/R	PROSEAL 890 B-2	SEALANT, AMS-S-8802 CLASS B-2

WAS:

9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)
---	-----	----------------	---

NOTE 12 & 15, SHEET 1 IS AMENDED AS FOLLOWS:

IS:

- 12) TO INSTALL D2891-1 SUPPORT: ABRAD MATING SURFACE OF SUPPORT AND CROSSTUBE WITH 180-GRIT SANDPAPER AND REMOVE RESIDUE WITH MEK (OR EQUIVALENT). APPLY A 0.04" TO 0.07" THICK LAYER OF PROSEAL 890 CLASS B-2 (OR AMS-S-8802 CLASS B-2) SEALANT TO MATING SURFACE OF SUPPORT.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING. **PRIOR TO PACKAGING, RE-CHECK TORQUE ON CLAMPS AFTER PROSEAL 890 SEALANT HAS CURED FOR 72 HOURS.**

WAS:

- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

72774

**RELEASED**  
2011-07-28  
*MD*



## LIQUID PENETRANT TEST REPORT

P- 05629

CLIENT

ATTENTION

ADDRESS

PROJECT

ITEM(S) EXAMINED

DATE

ACUREN JOB NO.

PO/WO No.

WORK LOCATION

ACCEPTANCE STD.

PAGE

OF

TIME

AM

PM

DART AEROSPACE  
LYNDA/CHANDLER/IAN/MATT  
1270 ABERDEEN ST.  
HAWKESBURY, ON

AUG/26/2011

188-11-02172

V47487

AS ADDRESS

ASTM1417/CS108 REV./DATE 2005

PT WET FLUORESCENT ON 6 CROSSTUBES

-SEE BELOW-

JOB DESCRIPTION

PROCEDURE NO. LT-002 REV./DATE 2007

TECHNIQUE NO. LT-002 REV./DATE 2007

PART NO.

MATERIAL ALKODINE ALUMINUM THICKNESS N/A

SCOPE

PERFORMED A WET FLUORESCENT LIQUID PENETRANT INSPECTION ON 100% OF THE EXTERNAL SURFACE ON ITEMS MENTIONED BELOW

## TEST DETAILS

METHOD	<input checked="" type="checkbox"/> FLUORESCENT	<input type="checkbox"/> VISIBLE	<input checked="" type="checkbox"/> WATER WASH	<input type="checkbox"/> SOLVENT REMOVABLE	<input type="checkbox"/> POST EMULSIFIED
FAMILY BRAND	MAGNAFLUX		BLACK LIGHT S/N	13798	
PENETRANT	21-67	MINIMUM DWELL TIME	10	MIN.	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 1000 $\mu$ W/CM <sup>2</sup> <input type="checkbox"/> AMBIENT < 2 fc
PENETRANT REMOVER	H2O	MINIMUM DRY TIME	>10	MIN.	OTHER
DEVELOPER	SKD-52	MINIMUM DWELL TIME	10	MIN.	LIGHT METER S/N
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS	<input type="checkbox"/> AQUEOUS	<input type="checkbox"/> DRY	CAL DUE DATE AUG/2012	

## TEST SURFACE

SURFACE CONDITION	<input type="checkbox"/> AS GROUND	<input type="checkbox"/> AS WELDED	<input type="checkbox"/> MACHINED	<input type="checkbox"/> SHOT BLASTED	<input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F	<input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F	<input checked="" type="checkbox"/> 10°C/50°F TO 52°C/125°F	<input type="checkbox"/> > 52°C/125°F	

## RESULTS-

☐ METRIC ☐ IMPERIAL

1	CrossTUBE W.O. ID	69579	✓
2		69580	✓
3		72774	✓
4		72775	✓
5		72776	✓
6		72777	✓

ITEM ID	D206-667-203	AFT
	D206-667-203	AFT
	D206-667-101	FWD
	D206-667-101	FWD
	D206-667-201	AFT
	D206-667-201	AFT

NO RELEVANT INDICATION WAS DETECTED AS PER APPLICABLE STANDARDS.

11-08-29

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE

TECHNICIAN (SIGNATURE):

NAME (PRINT):

CGSB LEVEL

CGSB REG. No

SNT LEVEL

3049

CGSB LEVEL

CGSB REG. No

SIGNATURE

2<sup>ND</sup> TECHNICIAN

CGSB LEVEL

CGSB REG. No

DTR # E44722

REPORT

REVIEWED BY:

NAME

INITIALS

WHITE - CLIENT COPY

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PT Sept 2005